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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/594,157	09/26/2006	Ian Alastair Kirk	ZQ120/07001	7042

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EXAMINER	
FULLER, ROBERT EDWARD	
ART UNIT	**PAPER NUMBER**
3676	

NOTIFICATION DATE	DELIVERY MODE
03/09/2011	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

USPTOmail@MiddReut.com

Office Action Summary	Application No.	Applicant(s)	
	10/594,157	KIRK ET AL.	
	Examiner	Art Unit	
	ROBERT E. FULLER	3676	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 February 2011*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,5,7-10,13-37 and 40-45* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,5,7-10,13-17 and 40-45* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on February 3, 2011 has been entered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1, 2, 7-10, 13-33, 35-37, and 40-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Buttolph (US 2,589,534) in view of DeBray et al. (US 6,032,748).

With regard to claims 1, 35, 36, 44, and 45, Buttolph discloses an apparatus for mobilizing drill cuttings in a well, the apparatus comprising a sleeve (13), at least one vane (28) provided on the sleeve, the sleeve having a bearing region (i.e. its outer surface proximate numeral 41), at least one bushing (14) that is rotatably mounted on the bearing region of the sleeve, at least two blades (51) mounted on the bushing, the at least two blades defining at least one fluid conduit between adjacent blades, the blades and vane being rotatable relative to one another (column 5, lines 64-71).

Buttolph discloses the wear sleeve being threadedly connected to the drill string, and fails to disclose the sleeve being split along at least one side, such that it clamps around the drill string.

DeBray et al. disclose an apparatus similar to that of Buttolph, having a wear sleeve (26) clamped around a drill string, the sleeve also having a bearing region on which a bushing (50) is rotatably mounted.

It would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have modified Buttolph such that the sleeve was split and clamped around the drill pipe, rather than threadedly attached, in order to enable the sleeve to be connected to the drill pipe "at most any location along the string" (DeBray et al., column 4, lines 26-28), rather than being constrained to only the areas which had threads.

With further regard to claim 35, in the combination of Buttolph and DeBray et al., the apparatus is clamped to the tubular by virtue of the sleeve itself being a clamp. With further regard to claim 45, Buttolph discloses an annular clamp (i.e. upper collar 11).

With regard to claims 2 and 37, since Buttolph discloses vanes and blades which are relatively rotatable, then Buttolph's apparatus will create a pressure difference in a fluid flowing past the vanes and blades.

With regard to claims 7, 9, 29, and 30, Buttolph discloses the vanes being parallel to the axis of rotation, while the blades are offset from the axis. Therefore, Buttolph fails to disclose the blades being parallel and vanes being offset. Buttolph also fails to disclose the specific angle of offset. Furthermore, Buttolph fails to disclose the vanes and blades being offset in opposite directions.

It would have been considered obvious to modify Buttolph to offset the vanes, rather than the blades, as this would have amounted to the mere reversal of the parts of Buttolph. It also would have been considered obvious to offset the vanes and blades in opposite directions, as this type of configuration was well known for creating upward thrust and turbulence in the wellbore, and therefore would have yielded predictable results. See Yancey for example, which shows offset vanes and parallel blades. See also US 2,352,412 to Sandstone, which shows oppositely offset vanes and blades. Finally, it would have been considered obvious to offset the blades of Buttolph by 3-10 degrees, as it has been held that discovering an optimum value of a result effective variable (i.e. the offset angle) involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

With regard to claim 8, Buttolph's blades extend helically (see Fig. 5).

With regard to claim 10, Buttolph discloses an annular clamp (i.e. upper collar 11) around the outside of the sleeve (i.e. in close proximity of the outside) and engaging an outer surface of the sleeve (i.e. the upper annular shoulder surface—see Fig. 5).

With regard to claims 13, 14, 40, and 41, in combination, Buttolph and DeBray et al. teach the vanes rotating with the drill string (as the wear sleeve in DeBray et al. is tightly clamped to the drill string via bushings 16 and 18).

With regard to claims 15-19, 27, 28, and 31-33, Buttolph fails to disclose the claimed shapes of the blades and vanes. However, these shapes are all well known, as shown by US 4,676,716 and US 3,882,946 (asymmetrical foil-shaped blades), US 6,056,073 (scooped, concave vanes), and US 5,074,356 (sinusoidal vanes). It would have been considered obvious to one of ordinary skill to have used anyone of the claimed blade/vane shapes, as this would have been a matter of simple substitution of one known configuration for another.

With regard to claim 20, Buttolph discloses a rigid bushing, since it is made of metal.

With regard to claim 21, Buttolph's sleeve is annular, and accommodates a tubular (10).

With regard to claim 22, Buttolph's vanes are integral (see Fig. 5).

With regard to claims 23 and 25, Buttolph shows both the vanes and blades being integral with the sleeve and the bushing, respectively. However, it would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have made the vanes and blades of Buttolph separable and modular, rather

than integral, to increase the ease of repair of the device, and because it has been held that constructing a formerly integral structure in various elements involves only routine skill in the art. *Nerwin v. Erlichman,* 168 USPQ 177, 179.

With regard to claim 24, Buttolph's blades are integral with the bushing (see Fig. 5).

With regard to claim 26, Buttolph's vanes are parallel to the axis of rotation (see Fig. 5).

With regard to claim 42, Buttolph's blades (51) centralize the sleeve within the wellbore (see Figs. 1-3).

With regard to claim 43, Buttolph discloses the bushing being a solid sleeve, rather than a clamp. However, DeBray et al. disclose the bushing (50) being split and clamped around the sleeve (26).

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Buttolph in view of DeBray et al. as applied to claim 1 above, and further in view of Yancey (US 2,794,617).

Buttolph in view of DeBray et al. fails to disclose blades that extend farther than the vanes.

Yancey discloses blades (56) which are rotatable relative to vanes (42), and the blades extend farther than the vanes (see Fig. 2).

It would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have extended the blades of Buttolph past the vanes,

as Yancey discloses that this type of configuration was well known in the art and would have yielded predictable results.

Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Buttolph in view of DeBray et al. as applied to claim 1 above, and further in view of Shizawa (JP62101149).

Buttolph in view of DeBray et al. fails to disclose the blades comprising a notch.

Shizawa discloses a mixing/agitating device having a blade (14) comprising multiple notches (13).

It would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have provided the blades of Buttolph in view of DeBray et al. with notches, as Shizawa states that "turbulences and divisions are generated by the flow caused by respective notches and blades...to mix and agitate the fluids more effectively" (see Shizawa Abstract).

Response to Arguments

The declaration under 37 CFR 1.132 filed February 3, 2011 is insufficient to overcome the rejection of claims 1, 35, 36, 44, and 45 based upon Buttolph in view of DeBray et al. as set forth in the last Office action because: The arguments put forth in the declaration are not persuasive. The declaration alleges that Buttolph teaches away from a combination with DeBray, since Buttolph's device is used for changing the direction of the drill string, and is therefore exposed to much higher loads than the DeBray device. Modifying the Buttolph device to be clamped would undermine the "simple and robust" construction required to withstand those loads. The declaration

further alleges that the decreased robustness of a clamped structure would make the sleeve more likely to dislodge during a jarring operation.

Examiner respectfully traverses applicant's arguments. The arguments refer to the Fig. 1 and 2 embodiments of Buttolph, where the sleeve assembly is used to direct the path of the drill bit. However, the Fig. 3 embodiment simply uses the sleeve assembly to keep the drill string on a vertical path (column 4, lines 3-15). The Fig. 3 embodiment of Buttolph and the device of DeBray perform the same function, that is, stabilizing and centralizing a drill string. Debray's device is therefore designed to withstand all of the same forces that Buttolph's device would experience. However, Debray provides the added benefit of being able to attach the device at any point on the drill string, without being confined to threaded areas. Therefore, modifying Buttolph to be clamped would not negatively impact its ability to perform its primary function, which is to centralize a drill string. It would merely add the option of additional attachment locations.

Buttolph does mention that his sleeve can withstand a jarring operation, but he does not explicitly discuss any link between the threaded construction of the sleeve and its ability to withstand the jarring operation. Nor does Buttolph link the “simple and rugged” construction of the device to its being threadedly attached to the drill string. These assertions come from the declaration, and from applicant's arguments, rather than from the reference itself. Furthermore, the declaration compares the strength of a clamped sleeve to one "integrated in line with" the bottom-hole assembly (see paragraphs 10 and 11), DeBray's being the former and Buttolph's being the latter.

However, there is a flaw in this comparison, because Buttolph does not disclose an "integrated" sleeve in the sense that applicant applies the word. Buttolph's sleeve is simply connected via a different means than DeBray's sleeve. Buttolph's threads could fail in the same way that DeBray's clamp can fail. However, the declaration seems to state that a clamped sleeve would certainly fail and a threaded sleeve would certainly not fail.

Examiner concludes that Buttolph does not teach away from modifying his sleeve to be clamped, as a clamped sleeve would still perform the same function as a threaded sleeve, with the added benefit of being able to attach the sleeve at any point on the drill string.

Conclusion

This is a Request for Continued Examination in Application No. 10/594,157. All claims are drawn to the same invention claimed prior to the Final Rejection and could have been finally rejected on the grounds and art of record in the next Office action if they had been entered prior to the RCE filing. Accordingly, **THIS ACTION IS MADE FINAL** even though it is a first action after the filing of an RCE. See MPEP § 706.07(b). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no, however, event will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ROBERT E. FULLER whose telephone number is (571)272-6300. The examiner can normally be reached on Monday thru Friday from 8:00 AM - 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shane Bomar can be reached on 571-272-7026. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Shane Bomar/
Supervisory Patent Examiner, Art Unit 3676

03/01/2011
/R.E.F./